DOCUMENT RESUME

ED 430 549 IR 019 582

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TITLE Disseminating Educational Research with IT.
PUB DATE 1999-07-00
NOTE 7p.; Paper presented at the International Conference on Artificial Intelligence in Education (9th, Le Mans, France, July 19-23, 1999).
PUB TYPE Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Access to Information; *Educational Research; Educational Resources; Evaluation; Foreign Countries; *Information Dissemination; *Information Technology; *Instructional Improvement; Research and Development; User Needs (Information); Users (Information); World Wide Web
IDENTIFIERS Teacher Needs; United Kingdom; *Web Sites

ABSTRACT

Teachers and researchers need to use the research produced in education to improve their practice. However, the current modes of dissemination through journals and papers are often written for the expert community. The Telematics Centre at the University of Exeter (United Kingdom), School of Education provides creative solutions for the effective use of information and communication technologies (ICT) in education and business. This paper describes an online embryonic version of the ICT Educational Research Forum (ERF), an Internet-based research center that is located within the United Kingdom's Virtual Teacher Center. The functions of the ERF are organized as a series of rooms with a menu bar alongside: the foyer where participants enter and are introduced to the resources available to them; the seminar room where researchers may be heard speaking; and a desk which provides access to a wide range of resources, tools, and data sets. The embryonic version of the ERF contains online and paper copies of a feedback form. The paper also provides a preliminary analysis of the evaluation data from the ICT Educational Research Center to examine if it is effectively disseminating research on educational technology to the less expert user, i.e., the teacher. (AEF)

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ED 430 549

What do we know of open learning environments?

IFIP WG 3.3 on educational research workshop on 18/7/99 for AI-ED Conference

Led by Jari Multisilta, Tampere University of Technology and chair of IFIP WG 3.3

Disseminating educational research with IT

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Abstract

Teachers and researchers need to use the research produced in education to improve their practice. However, the current modes of dissemination through journals and papers are often written for the expert community. This presentation will demonstrate an on-line embryonic version of the first research centre of this kind on the Internet, which is located within the UK's Virtual Teacher Centre. The paper will also provide a preliminary analysis of the evaluation data from the 'ICT Educational Research Centre' to see if it is fulfilling its design to disseminate educational research on IT in Education to the less expert user: the teacher. The embryonic version, which incorporates aspects of multimedia, radio and traditional publishing, the ERC may be located at http://telematics.ex.ac.uk/ERC

Introduction

One of the challenges of research, including research into new technologies in education, is to ensure that it gets into the profession and that the profession is able to inform the research agenda. At the same time, there is a growing perception that the education profession needs to become a more 'evidence-based' and draws upon educational research and validated good practice. This applies to teachers in all phases of education from the nursery school to the university. However, because teaching and learning take place in increasingly a complex environment across multiple organisations and systems, the research requires careful interpretation into practice. Therefore the dissemination of research may be viewed as an open learning environment for users of educational research and for the researchers as they learn more about the agenda of their users and the users learn more about the limitations and depth of educational research.

About a year ago I started to consider what sort of an open learning environment would be suitable and to create it, plus an infrastructure that would support its growth. The idea was welcomed by members of IFIP working group 3.3 for educational research at our annual general meeting chaired by Jari Multisilta in Vienna in August 1998 during the Teleteaching'98 conference within the IFIP World Congress. In the UK the advent of a National Grid for learning managed by the British Education Communication Technologies agency (BECTa) provided the impetus and support to start to turn the vision into reality.

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This paper describes the early stages of the development and research of what is now known as the *'ICT Educational Research Forum'* (ERF), which can be found at http://telematics.ex.ac.uk/ERC.

The ERF Principles

Research into the design of web sites for education has burgeoned during 1998 (see for example [1]. Our research team in the University of Exeter Telematics Centre, like many others, recognises the need to adopt an approach that is living and sustainable in style, permitting growth and change with the needs of its communities of users. Through development of international web sites, including that on sea turtles led by Roger Poland and Telematics for Teacher Training led by Paul Thornton and Niki Davis, we have been establishing principles relating to design of educational web sites that encompass: Information, interactivity, technology, understanding, and graphics & sound [2]. Our Telematics Centre research team recognises that, although the World Wide Web may be viewed as a publishing environment, the major strengths of the medium is its ability to grow and combine contributions of the community.

The ERF is working with and for two overlapping communities: educational researchers and [potential] users of educational research. Our web site has the aim of helping the two communities to learn about each other and to translate this knowledge into better practice within their own contexts. We recognise that, in order to promote use of and contributions to the ERF, we must provide opportunities and activities that are timely and valued by the participants. The *'development and research'* approach we are adopting in this quest is described in detail in another paper [3]. It will be familiar to computer scientists in its similarity to iterative prototyping. The iterations are part of the organic process of development and so become parts of the process of development and of research.

Our Forum on educational research borrows its style from several genres across a number of media. The ERF is takes analogies with a building housing a research centre. It is both natural for us to use the building that houses our own centre and to manipulate digital photographs that remodel this into the ERF and the mode in which we wish our visitors and researchers to interact on-line. The quality assurance and management of the ERF borrows some of its underlying process from scholarly research journals. It has an Editorial Board of leading researchers in this field. However, it does not aim to publish articles as if they were papers in a research journal, because the presentations are aimed at users of research and so must be of more practical relevance speaking directly to the profession. Presentations in the ERF on educational research have borrowed their style from several genres: university seminars, radio interviews and multimedia packages. The flexible learning environment borrows aspects of library practice mixed with more standard web publishing. This eclectic style is brought together with the input of an designer experienced in a range of multimedia publications through our UK and European work in teacher education and research into training of other professions, including real estate agents [4].

The embryonic version will now be described to illustrate these design principles in practice. The Educational ICT Research Centre is led by Professor Niki Davis, who is advised by a board of selected ERC Research Fellows, chaired by Dr. Peter Avis of BECTA. In line with the design style of a building, the functions ERF are implied by the analogy with rooms with a menu bar alongside. The rooms are: the foyer where participants enter and are introduced to the resources available to them; the seminar room where researchers may be heard speaking;

and a desk which provides access to a wide range of resources associated with the research sessions, plus tools and data sets and so on. The aim is to stimulate a community approach to this development. BECTa hope that the ERC can set a appropriate style for the developing UK National Grid for Learning where users' interactions are gathered and published in the ERC along with presentations by experienced researchers and associated WWW links, courses and resources.

The Foyer

The foyer of the ERF provides introduction to the centre, see Figure 1. The ongoing programme of events and sessions is on the wall. In January 1999 the programme and collection were embryonic but by January 2000 after 9 seminars the collection will have grown to justify its name. From the Foyer a seminar room can be glimpsed through the door. A desk holding resources to browse is against the wall.

Figure 1. The foyer of the ICT Educational Research Forum, embryonic version 1999. (http://telematics.ex.ac.uk/ERC/)

In the foyer the introductory talk explains that the core of the ERF are the sessions provided by leading researchers. During 1999 nine sessions will be edited into presentations published over the World Wide Web:

- to provide a resource for teachers' professional development:
  - practising teachers, head teachers, student teachers, university tutor & mentors ...
- for researchers studying ICT
  - researchers of: education and training, WWW
  - agencies that fund educational research
  - research students ...
- for policy makers and managers
  - in schools, agencies, government ...
- for publishers, developers and service providers
- and for others who have an interest in this topic.

The seminar room

The Educational ICT Research Centre's seminar room is designed to welcome participation by prompting familiar social behaviour with pictures, see Figure 2. Click on the presenter to hear their session. Real audio is presented in small files lasting approximately 1 minute and linked to either PowerPoint slides or text or multimedia pages. The speaker's voice is linked to slides and notes. These are interspersed with illustrative material and an opportunity for participants to put across their views and hear other peoples' questions and answers to them. Experts cannot be available on on-line at all times, therefore the analogy is taken with a telephone answering machine to record participants questions and comments. These are then edited into web pages to provide an 'answer garden' edited together on the theme of each session.

Figure 2. The seminar room of the ICT Educational Research Forum, embryonic version 1999. (http://telematics.ex.ac.uk/ERC/lecture2/room.htm)

As the sessions are accumulated in the ERF, they will be catalogued and inter-linked using hypermedia and web design to enable teachers and others to locate information on a topic or theme. A particular challenged recognised by the ERF team and the Editorial Board is how to provide access to information to teachers and others who will be unfamiliar with the terms and concepts that permeate ICT in education and educational research. The glossary written for student teachers new to ICT and education [5, with permission from the publishers Letts] is designed to support teachers new to ICT.

Researchers willing to contribute a session are asked to provide a short profile of their interests and publications. We hope that this, together with the discussion and frequently asked questions, will grow to support the research-active community of practice as well as enable observers to discover a rich research culture.

The seminar programme consists of a monthly performance, either by a leading researcher on ICT in education or other specialists on an educational focus where the significant benefits of ICT have been demonstrated. To the resources that make up the presentation by the each speaker, which consist of audio files, slides etc.) are added other materials such as multimedia clips, case studies and reports that are contributed by the researchers or others in the field. The format of each session is chosen by the editor and the presenter of the research to suit the topic and the media available. The first session by the first author on research into 'ICT and teacher training' took the form of a seminar and was gathered alongside a live seminar in Exeter. The second session was in the style of a radio interview illustrated by slides by Angela Macfarlane on research about 'Integrated learning systems'. The fourth session will adopt a third style more akin to a multimedia package led by Professor David Wood, director of the UK national Research Council Research Centre for teaching and learning.

The desk

Users may choose to browse the resources in the ERF through the desk, see Figure 3. The books are currently book list with links to book reviews, a book chapter or two and some full reports. Journals are linked when available on-line plus links to specific papers where permission is granted. Web sites includes a wide variety of materials, including case studies of classroom practice and multimedia illustrations or teaching materials. The desk may also be used to ask questions or to make a comment. There is also a facility to add a resource or link, research tools and ICT glossary. The slides and notes will be available here with relevant live links. The names and profiles of the ERF research Fellows are provided in manila folder on the ERF desk. After the embryonic stage, the ERC will allow users to search across sessions according to their own topic of interest.

Figure 3. The desk of the ICT Educational Research Forum, embryonic version 1999. (http://telematics.ex.ac.uk/ERC/resource.htm)

Evaluation and research of the ERF

The embryonic version of the ERF contains a feedback form, which has as yet been rarely completed on-line. A paper copy of this questionnaire has been used to gather data form a small sample of research students and researchers. A presentation of the ERF to the association for IT in Teacher Education research conference welcomed the concept and

suggested that users be extended to school governors and parents. In addition research is planned with teachers on courses and in the field.

The introductory talk in the ERF foyer also prompts users to suggest what they might like to find in an ERF. In line with ethical practice in Exeter University School of Education, the ERF will treat information confidentially when requested to do so and will also ask permission of individuals via e-mail when we feel that the information provided would raise an uncomfortable issue. In the live session in Exeter the following development were suggested for the ERF: Reference to past research, and teachers' own practice. While it was realised that access to request teaching resources [Note: teaching resources and references to published version are provided on BECTa's web site], it was felt that links to relevant teaching resources would be valued. A virtual research methodologies virtual course, or link to one, was proposed, possibly accompanied by a virtual research mentor.

The ERF Editorial Board also provides evaluation and planning for the future. The first meeting in April 1999 approved the embryonic design and suggested several additions for the next version. There was also a discussion of ways in which to liase with other organisations and individuals so that the ERF can create a synergy with existing resources and activities. For example links with the ESRC data archive will be valuable for both the archive and the ERF 'desk drawer' of data sets that can be analysed from a variety of users' views. Interestingly there was relatively little discussion on the ways in which sessions may be captured: perhaps because we are adopting a number of approaches and need time to refine the approaches with experience.

One major change in design emphasis proposed by the ERF Editorial Board is to move the emphasis away from the researcher, who should know about educational research and therefore not find the ERF difficult to use. Instead the emphasis in ease of use is to be for teachers to feel comfortable with the interface and to encourage them to join in the dialogue with researchers both looking for confirmation of their interpretation of the evidence into practice and teachers input into the research agenda. For this reason the ERF Editorial Board proposed an open form of ERF membership, where all sorts members will provide a short description of their interests in joining the ERF. This will be added to the Foyer along with guides, who may be chosen according to user's interest and needs for a choice of: a teacher, an experienced researcher or a research student. The ERF will also become increasingly international bringing in expertise and participation from around the world. The Board discussed topics for sessions and noted a divergence between what they would wish to present and the probable needs perceived by teachers at this time. However, as it was clear that the research community have relatively little knowledge of the interests of teachers in relation to research, the Editorial Board also recommended to BECTa that a small research study be undertaken into a key group such as those teachers who have been awarded a multimedia portable computer for their own professional use. It was recognised that teachers' perceptions of their needs for ICT educational research will change rapidly with experience of ICT, and so the on-line discussions of this sample of UK teachers could provide a valuable snapshot view of developing view over the first year of laptop and Internet use.

In addition, the ERF is itself will be the subject of research in several dimensions. As described earlier there is research into interface design and its development to suit users, especially teachers. There will also need to be measures of value and in relations to the Editorial Board have suggested: number of users who register their interest as members, the number of organisations collaborating to provide resources and/or seek feedback, and case

studies of where the ERF has influence educational practice and/or developed the educational research agenda. Traditional scholarly measures, such as the quality of participation and reviews of sessions in this and other media are also likely to be valuable, plus the adoption of the approach by other sectors.

The outcomes of evaluations will be fed into the redesign of the ERF. The design process is planned to occur in stages: the embryonic design with the first lecture was launched in January 1999. This will be redesigned and relocated onto a dedicated server during 1999 and then expanded to celebrate the Millennium at British Education Training Technologies (BETT) exhibition in January 2000. At that time we will need to re-evaluate the effort against the value and plan for the next stages in development.

Acknowledgements

The ERC is made possible though support from BECTa, the University of Exeter, and the educational research community. Support for the earlier Virtual Study Centre was provided by EC DG XIII_C Telematics Applications Programme, ICL and Sun is gratefully acknowledged.

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